



The ring around M-81 is just barely visible at the upper left of the galaxy in this specially prepared photograph.

RING AROUND A GALAXY

A huge, faint, luminous ring, about 100,000 light years (or 600,000,000,000,000 miles) in diameter has been discovered around one end of the spiral galaxy M-81. It is theorized that the great ring, which apparently consists of a plasma of charged particles, was ejected from the galaxy M-82 by a titanic explosion and, as it moves out into space, is beginning to "light up" in the magnetic field of the neighboring galaxy M-81.

This is probably the first evidence of material from one galactic island universe being ejected through space to another galaxy. Even more important, this is the first evidence of an over-all magnetic field of a spiral galaxy.

The ring was discovered by Halton C. Arp, staff member of the Mt. Wilson and Palomar Observatories, while he was searching for unusually faint objects in the sky, such as bridges of gas, stars, and dust between galaxies, with the 48-inch Schmidt telescope at Palomar. To obtain a picture of the ring, Dr. Arp used a photographic technique that intensifies the image of a faint object and filters out un-

wanted light. He also took advantage of the fact that the night sky is the "darkest" it has been for 11 years, and made several long exposures of 50 minutes each.

Three of these long-exposure negatives were made into a composite negative by William Miller, staff photographer of the observatories. A print from the superimposed negatives, like that shown above, finally revealed the ring.

The faint but distinctly visible ring around M-81 is 100,000 light years from its "parent" spiral galaxy M-82. M-82, apparently in the act of exploding, was photographed last year by Allan R. Sandage of the Mt. Wilson and Palomar Observatories (*E&S* — March 1964). M-82 and M-81, are only 60 billion billion miles (10 million light years) from the earth, which is not far in astronomical terms.

"If indeed the ring is from M-82 and is impinging on the magnetic field of M-81, as it appears to be," says Dr. Arp, "then nature has set up for us an enormous experiment that can tell us a great deal about the magnetic field of M-81 and about the explosion of M-82."